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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/765,816      | 01/27/2004  | Susan G. Yan         | GP-302217           | 2446             |

7590 04/21/2006

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| EXAMINER |
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ECHELMEYER, ALIX ELIZABETH

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| ART UNIT | PAPER NUMBER |
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1745

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/765,816

Applicant(s)

YAN ET AL.

Examiner

Alix Elizabeth Echelmeyer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☒ Claim(s) 1, 7, 11, 16, 22 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 1-27-2004.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

***DETAILED ACTION***

***Priority***

1. Acknowledgment of Applicant's claim to priority to 10/360,999 filed February 7, 2003 is made.

***Information Disclosure Statement***

2. The Information Disclosure Statement submitted by Applicant has been considered by the examiner.

***Specification***

3. The disclosure is objected to because of the following informalities: in [0008], the first line discusses "art for the catalysts layers ..." In this sentence, catalyst is an adjective describing the plural layers but should not be plural itself. In [0023], in the last sentence, Applicant lists possible catalyst metals, including PtMi. Examiner does not believe Mi to be an element, perhaps Applicants meant Ni.

Appropriate correction is required.

***Claim Objections***

4. Claims 1, 11, and 16 are objected to because of the following informalities: the acronym BET is used without being previously defined in the claims. Appropriate correction is required.

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5. Claim 16 is objected to because of the following informalities: it claims a "surface area in the range of 600 - 120 m<sup>2</sup>/g." Examiner believes Applicant meant to claim the range 600 - 1200 m<sup>2</sup>/g based on the similar range of 600 - 1000 m<sup>2</sup>/g from claim 1. Appropriate correction is required.

6. Claims 7 and 22 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claims, or amend the claims to place the claims in proper dependent form, or rewrite the claims in independent form. Both claims refer to other non-noble metal catalysts, while both depend from independent claims where Pt or Pt alloys are named as the catalyst. Other non-noble metal catalysts do not have to include Pt or Pt alloy catalysts, and therefore the phrase "other non-noble metal catalysts" is broader than the phrases describing catalysts in the claims from which 7 and 22 are dependent, making claims 7 and 22 fail to further limit the subject matter of a previous claim.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 7 and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Both claim the catalyst PtMi. The element Mi does not exist.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hori et al. (US Patent Number 6,916,575) in view of Hitomi (US Patent Number 6,528,201) as further evidenced by Wang et al ("Electrochemical characterization of binary carbon supported electrode in polymer electrolyte fuel cells").

Hori et al. teach a polymer electrolyte fuel cell with a catalyst layer having two layers, one made of carbon with platinum, and the other made of carbon without platinum (abstract; Figure 3; column 3 lines 36-43). Hori et al. further describe the first catalyst layer to have Pt carried on Ketjen black having a BET surface area of 800 m<sup>2</sup>/g and a weight ratio of 50:50. The second catalyst layer, containing no metal catalyst, is made of VULCAN and is in a 5-50 weight % ratio with the first catalyst layer. The catalyst loading of this system is 0.3 mg/cm<sup>2</sup> (column 7 lines 50-64). In another description of this catalyst system, Hori et al. define the VULCAN layer as having a surface area of 250 m<sup>2</sup>/g.

Regarding claims 1, 11, and 16, Hori et al. fail to teach the first catalyst layer including 10-70 wt% Pt or Pt alloy formed on carbon particles. Hitomi teaches a catalyst

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metal, Pt, supported on Vulcan XC72, and that the catalyst system is less than 50 wt% Pt (column 10 lines 52-67).

It would be desirable to coat the Vulcan XC72 particles with a metal catalyst because it facilitates proton conduction (column 18 lines 20-28).

Further, Wang et al. teach that a binary support electrode having two catalysts containing Pt and carbon leads to improved polarization performance (p. 286).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the catalyst system of Hori et al. but add Pt to the second carbon layer because the additional Pt would facilitate proton conduction and thereby improve performance.

### ***Double Patenting***

10. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

11. Claims 1-27 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-27 of copending Application No. 10/851,695. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
PATRICK JOSEPH RYAN  
SUPERVISORY PATENT EXAMINER

Alix Elizabeth Echelmeyer  
Examiner  
Art Unit 1745

aee